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| APPLICATION NO.                           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/564,956                                | 12/05/2007  | Takashi Namari       | 053547              | 5396             |
| 38834                                     | 7590        | 04/19/2010           | EXAMINER            |                  |
| WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP |             |                      | HAMAOU, DAVID E     |                  |
| 1250 CONNECTICUT AVENUE, NW               |             |                      | ART UNIT            | PAPER NUMBER     |
| SUITE 700                                 |             |                      | 3747                |                  |
| WASHINGTON, DC 20036                      |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

[patentmail@whda.com](mailto:patentmail@whda.com)

|                              |                                      |                                      |
|------------------------------|--------------------------------------|--------------------------------------|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/564,956 | <b>Applicant(s)</b><br>NAMARI ET AL. |
|                              | <b>Examiner</b><br>DAVID HAMAOUI     | <b>Art Unit</b><br>3747              |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 01 February 2010.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 6 and 8-11 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 6 and 8-11 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 18 January 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/06)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION*****Response to Arguments***

1. Applicant's arguments filed 2/1/10 have been fully considered but they are not persuasive.
2. In response to Applicant's argument [indicated in **bold**]:
3. **[Applicant:] Kelly does not teach or suggest detecting a one rotation period from when cranking of an internal combustion engine is started to when the crankshaft has completed one rotation.**
4. Kelly was not relied upon to teach this. Accordingly, this argument is moot.
5. **[Applicant:] Further, Kelly does not teach or suggest a pulse signal corresponding to the "reference pulse signal" in claim 1 of the present application.**
6. Kelly was not relied upon to teach this. Accordingly, this argument is moot.
7. **[Applicant:] In Ohira, a spark plug 37 in an ignition device 35 sparks at a fixed time 5 degrees before and after TDC in response to every pulse of the G2 signal by a controller circuit (step 114) in a period until the crankshaft is rotated once after cranking of the internal combustion engine is started. However, Ohira does not disclose positively detecting such period.**
8. Examiner is not sure exactly what feature(s) Applicant intends to be positively reciting in the limitation that describes detecting the first crankshaft revolution (see below; *Claim Rejections – 35 USC 112*). However, it is Examiner's position that Ohira does disclose positively detecting such a period. Particularly, Ohira detects every crankshaft revolution (period of rotation) and therefore must also detect the first one.
9. To clarify by way of example, consider a turnstile that detects (counts) people passing through it. Assume that the turnstile records no information about the time of day that people pass through it. One could talk about detecting people that pass through the turnstile between 9:00 am and 10:00 am and claim that the turnstile does not detect such instances. However, this would be an error. The turnstile would positively detect a person passing through it at every moment in a given day. Thus, it necessarily follows that it did detect a person passing through it between 9:00

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am and 10:00 am. It can only be said that it may not have recognized the fact that it was between 9:00 am and 10:00 am, but this is simply a matter of labeling.

10. Similarly, Ohira necessarily detects Applicant's claimed "*one rotation period*" (the period from when cranking of said internal combustion engine is started to when said crank shaft has completed one rotation), simply because it detects every period. Ohira just doesn't disclose that it labels that period with any special label (ie. the *first* period).

11. Thus, Examiner considers that Applicant may be trying to argue that Ohira does not label such a period. However, even if Applicant were to positively claim that the "*one rotation period*" is labeled as such, this would still not be a point of patentability. Particularly, because labeling items in software is simply a matter of design choice unless it can be shown that these labels somehow provide unexpected results. Currently, Applicant has not submitted any arguments to support such an assertion.

12. [Applicant:] Therefore, Ohira and Kelly do not disclose "said ignition control means detects, in accordance with said crank angle pulse signal and said reference pulse signal, a **one rotation period from when cranking of said internal combustion engine is started to when said crank shaft has completed one rotation**" and "**instructs electric supply to an ignition coil in accordance with said reference pulse signal before the instruction of the spark discharge of said ignition plug in the one rotation period,**" as recited in claim 1.

13. Examiner maintains that the proposed combination of Ohira and Kelly does disclose these limitations (see below; Claim Rejections – 35 USC 103). Briefly restated, Ohira teaches the bulk of the claimed invention but may be interpreted as lacking wherein the controller employs a separate supply and discharge timing. Kelly teaches independently controlling the supply and discharge timing parameters in such a system. It would have been obvious to modify Ohira to employ its method (already consisting of: a reference pulse, instructing a spark discharge during the first crankshaft rotation, etc) and also to separate supply and discharge timing parameters, as taught by Kelly.

***Claim Rejections - 35 USC § 112***

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. **Claims 6 – 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

16. *In re claim 6, the limitation, "wherein said ignition control means detects, in accordance with said crank angle pulse signal and said reference pulse signal, a one rotation period from when cranking of said internal combustion engine is started to when said crank shaft has completed one rotation" is unclear. Specifically, it is unclear exactly what feature(s) are being positively recited in this limitation (the aspect that Applicant describes as "positively detecting such a period"). To understand the present language of the claim, Examiner asks: How is the system actually different, or what is the controller actually doing that is different from the claim submitted previously? It seems that no structure need be added/altered to meet this limitation. It also seems that no function need be added/altered to meet this limitation (See above; Response to Arguments).*

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

19. **Claims 6, 9-6, 10-6, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohira (US 2002/0112711) in view of Kelly (US 5,623,912).**

20. **In re claim 6,** Ohira discloses (fig 1) [0033 – 0035] an ignition timing controller, comprising:

- a crank angle detecting means (10) for generating a crank angle pulse signal for each rotation of a predetermined angle, and for generating the pulse signal immediately before the crank angle corresponding to the top dead center of a piston of said internal combustion engine as a reference pulse signal having an aspect different than an aspect of non-reference crank angle pulse signals; said crank angle detecting means being rotated in association with a crank shaft of an internal combustion engine; and
- an ignition control means (31) for controlling ignition timing of said internal combustion engine in accordance with said crank angle pulse signal;
- wherein said ignition control means
  - detects, in accordance with said crank angle pulse signal and said reference pulse signal, a one rotation period from when cranking of said internal

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combustion engine is started to when said crank shaft has completed one rotation (see above; *Claim Rejections – 35 USC 112*), and

- o instructs spark discharge of an ignition plug of said internal combustion engine for the ignition timing in accordance with a reference crank angle pulse signal generated immediately after said reference pulse signal in the rotation period.

21. Ohira may be interpreted as lacking\*:

- wherein said ignition control means instructs electric supply to an ignition coil in accordance with said reference pulse signal before the instruction of the spark discharge of said ignition plug in the one rotation period.

22. \*In a prior action, it was argued that this claim language is broad enough to be anticipated by Ohira. Examiner maintains this position. However, for the purpose of compacting prosecution, this limitation will be interpreted as lacking. The reason for this is to demonstrate that even Applicant's *Intended* invention [and certainly the *claimed* invention] is unpatentable over the prior art.

23. Kelly discloses (col 12, 29 – 45) an ignition system wherein an ignition control means instructs electric supply to an ignition coil in accordance with a reference pulse signal before an instruction of a spark discharge of an ignition plug. Additionally, this technique is well known.

24. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Ohira by providing wherein the controller instructs a timed electric supply signal, as taught by Kelly, as it is a known technique and thus within the capability of one having ordinary skill.

25. Such a modification would yield:

- wherein said ignition control means instructs electric supply to an ignition coil in accordance with said reference pulse signal before the instruction of the spark discharge of said ignition plug in the one rotation period.

26. In re claim 9-6, Ohira discloses [0037] wherein said crank angle pulse signal including said reference pulse signal is constructed by a negative pulse and a positive pulse constituting a pair, but lacks, wherein said negative pulse is generated correspondingly to the front end of each

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of said detection portions, and said positive pulse is generated correspondingly to the rear end of each of said detection portions. Rather, Ohira discloses wherein the positive pulse corresponds to the front end of each detection portion and the negative pulse corresponds to the rear end.

27. However, it would have been obvious to one having ordinary skill in the art to have set the pulses in the claimed manner as these manners are functionally equivalent techniques for their use in the art and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

28. In re claim 10-6, Ohira discloses [0051] wherein said ignition control means discriminates said reference pulse signal in accordance with the magnitude of a ratio of the generating interval of said negative pulse and the generating interval of said positive pulse.

29. Claims 8, 9-8, and 10-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohira (US 2002/0112711) in view of Kelly (US 5,623,912) in view of Ono (US 6,032,649).

30. In re claim 8, Ohira discloses (fig 1) wherein said crank angle detecting means comprises:

- a rotor (11) rotated in association with said crank shaft of said internal combustion engine and including projections (20 – 25), every projection on said rotor being one of a plurality of detection portions to be detected at angular intervals on an outer circumference of said rotor; and
- a pickup (30) arranged at the vicinity of the outer circumference of said rotor, said pickup generating said crank angle pulse signals when each of said plurality of detection portions pass therethrough;
- wherein a selected detection portion (20) among said plurality of detection portions is located immediately before the crank angle corresponding to the top dead center of the piston of said internal combustion engine and is set to generate said reference pulse signal [0033], and
- wherein the respective rear end positions of the plurality of detection portions are located at angular intervals in the rotating direction of said rotor, and a length from a rear end

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- position to a front end position of said selected detection portion is different than lengths from rear end positions to front end positions of non-selected detection portions among said plurality of detection portions (fig 1).
31. Ohira lacks:
- *every projection on said rotor being one of a plurality of detection portions to be detected at equivalent angle intervals on an outer circumference of said rotor, and*
  - *wherein the respective rear end positions of the plurality of detection portions are located at equivalent angle intervals in the rotating direction of said rotor.*
32. Ono discloses (fig 1) a crank angle detecting means comprising
- a rotor (1) rotated in association with a crank shaft of an internal combustion engine and including projections (2), every projection on said rotor being one of a plurality of detection portions to be detected at equivalent angle intervals on an outer circumference of said rotor; and
  - wherein a selected detection portion (area of phantom detection portions A) among said plurality of detection is set to generate said reference pulse signal.
33. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Ohira by including more projections such that all of the projections are located at equivalent angle intervals on an outer circumference of the rotor, as taught by Ono, as it is a known technique and thus within the capability of one having ordinary skill. (Applicant's remarks concerning what was essentially the same combination as this have been addressed in the prior action dated 3/23/09.)
34. In re claim 9-8, see above (In re claim 9-6).
35. In re claim 10-8, see above (In re claim 10-6).
36. Claims 11-6 and 11-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohira (US 2002/0112711) in view of Kelly (US 5,623,912) in view of Ono (US 6,032,649) in view of Haimerl et al. (US 2002/0167419).
37. In re claim 11-6, the combination of Ohira / Kelly / Ono has been discussed, but lacks:

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- wherein in the one rotation period, said ignition control means instructs an electric supply to said ignition coil when a value obtained by dividing the generated interval between said negative pulses by the generated interval between said positive pulses is smaller than one, and
  - wherein said ignition control means also instructs the spark discharge of said ignition plug when the value obtained by dividing the generated interval between said negative pulses by the generated interval between said positive pulses is greater than one.
38. Haimerl discloses [0027] wherein ratios of time intervals indicating passing of teeth on a crank angle sensor are utilized to determine a reference signal and ignition timing is determined accordingly. Additionally, Ohira teaches this principle as well [0011], only in the context of determining rotation direction.
39. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Ohira / Kelly / Ono by utilizing ratios of time intervals indicating passing of teeth on a crank angle sensor to determine a reference signal and accordingly, ignition timing, as taught by Haimerl, as it is a known technique and thus within the capability of one having ordinary skill.
40. Regarding limitations that seem to indicate exactly how long or spaced the teeth must be (ie. the ratio being greater/smaller than one) in order to be utilized for the reference signal and ignition timing: It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust these parameters, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Additionally, it seems that these exact values are matters of design choice. That is, the ratio threshold can be set at some value for any size/spacing of teeth in order to perform substantially identically.
41. In re claim 11-8, see above (In re claim 11-6).

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***Conclusion***

42. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

43. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID HAMAOUI whose telephone number is 571-270-5625. The examiner can normally be reached on Monday - Friday, 9:00am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Cronin can be reached on 571-272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DAVID HAMAOUI/  
Examiner, Art Unit 3747

/Stephen K. Cronin/  
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